

Abstract

A novel array waveguide evanescent coupler (AWEC) for card-to-backplane or other appropriate optical interconnections. Evanescent coupling is similar to the well-known waveguide directional coupling. The coupler comprises: (A) a coupler frame; and B) a pair of opposing, parallel carriers that are housed within the frame and define facing parallel and coaxial channels that receive: 1) backplane waveguide optical fibers or another first array of optical fibers having a exposed cores; and 2) a second array of optical fibers or AWEC ribbon fibers having a exposed cores and retain them in facing evanescent optical contact. A securing mechanism in the form of locking screw(s) or spring(s) in or inserted into the coupler frame provide for the retention of the optical fiber cores of a pair of fiber ribbons or backplane waveguide fiber ribbon cores and AWEC ribbon fiber cores in evanescent optical contact. Optionally, a layer of index matching fluid between facing optical fibers or fiber ribbons may be used. The method for achieving evanescent coupling is also described.